

Listing and Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (previously amended) A method of performing semi-automatic tracking of
2 colored objects within a video image sequence comprising the steps of:
3 separating objects within an initial frame of the video image sequence on the basis of
4 color;
5 receiving a user-provided input that selects an object of interest from the separated
6 objects by a user identifying a centroid of the object of interest; and
7 tracking the object of interest through successive frames of the video
8 image sequence using a Kalman predictive algorithm applied to the centroid.

1 2. (original) The method as recited in claim 1 wherein the tracking step comprises the
2 steps of:
3 from the initial frame determining a position and velocity for the centroid;
4 for each successive frame predicting a position of the centroid;
5 from the predicted position extracting a connected group of blocks that belong to the
6 object of interest;
7 measuring the position of the centroid in the successive frame from the connected group
8 of blocks; and
9 smoothing the measured position and velocity of the centroid.

1 3. (original) The method as recited in claim 1 further comprising the steps of:
2 detecting whether the centroid in the successive frame is within the object of interest and
3 field of view; and
4 applying an error recovery scheme to re-identify the object of interest in the successive frame.

1 4. (previously amended) A method of tracking a colored object moving relative to a
2 background within a sequence of video image frames, comprising the steps of:
3 (a) in an initial frame of the sequence, separating objects from the background based on
4 color;
5 (b) selecting a separated object by a user identifying a reference point within a boundary
6 of the separated object; and

7 (c) tracking the selected object through successive frames of the video image sequence
8 using a Kalman predictive algorithm applied to the reference point.

1 5. (previously amended) The method according to claim 4, wherein step (c) includes the
2 steps of determining the position of a centroid of the selected object and applying the Kalman
3 predictive algorithm to the centroid.

1 6. (previously amended) The method according to claim 4, wherein step (c) includes the
2 steps of determining the position of a centroid based on a color function of the selected object
3 and applying the Kalman predictive algorithm to the centroid.

1 7. (previously amended) The method according to claim 4, wherein step (c) includes the
2 steps of determining the position of a centroid based on luminance of the selected object and
3 applying the Kalman predictive algorithm to the centroid.

1 8. (previously amended) The method according to claim 4, wherein each image frame is
2 resolved into multiple blocks and step (a) comprises the step of segmenting the initial frame
3 based on color of the blocks.

1 9. (previously amended) The method according to claim 8, wherein step (b) includes the
2 step of identifying a color model to which the selected object belongs and step (c) includes the
3 steps of:

4 predicting the position of a centroid of the selected object in a subsequent frame;;
5 determining whether the predicted position of the centroid in said subsequent frame is
6 within a boundary of the selected object in said subsequent frame;; and

7 in the event that the predicted position of the centroid in said subsequent frame is not
8 within the boundary of the selected object in said subsequent frame, carrying out a search to
9 identify a block that belongs to the selected color model.

1 10. (previously amended) The method according to claim 4, wherein each image frame
2 is resolved into multiple blocks and step (c) comprises the steps of:

3 determining position and velocity of a centroid of the selected object in the initial frame;;
4 predicting the position of the centroid in a subsequent frame;;
5 from the predicted position of the centroid in said subsequent frame, extracting a
6 connected group of blocks in said subsequent frame that belong to the selected object;; and

- 7 calculating the position of the centroid of the selected object in said subsequent frame from the
- 8 connected group of blocks.
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